Remarks

Claims 1-38 were pending in the present application. Claims 1 and 2 have been cancelled without prejudice or disclaimer of the subject matter therein and new claims 39-41 have been added. It is submitted that that pending claims define allowable subject matter.

In response to the indication that claim 15 would be allowable if rewritten in independent form, claim 15 is present in independent form above.

Claims 1-14 and 25-32 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Livshutz et al. (USP 6,112,200) in view of Israni et al. (USP 6,308,177). Claims 16-17, 19-20, 22-23, 33-35 and 37 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura (USP 6,421,659) in view of Israni and Nomura (USP 5,371,678). Claims 18, 21, 24, 36 and 38 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura ('659), Israni, and Nomura ('678) in view of Tanimoto (USP 6,263,277). Applicants respectfully traverse these rejections for reasons set forth hereafter.

Claim 1 had been replaced by new claim 39. Claim 39 defines a method for organizing roadway network data in a memory storage device that comprises, among other things, providing a data set that includes node records uniquely associated with corresponding nodes in a roadway network. The method further includes assigning a unique number to each node record based on a geographic location of a coresponding node relative to surrounding nodes, reordering the node records into a node list based on the unique numbers, dividing the node list into at least first and second node blocks by grouping consecutively numbered node records and storing nodes records in the first node block in contiguous memory.

Neither Livshutz, nor Israni, teach or suggest the claimed method, including among other things, the claimed assigning, reordering and dividing limitations. In Livshutz, the map database 40 contains node and segment data regarding locations 114. Each location 114 is identified by a two or three dimensional geographic coordinate, namely latitude, longitude and altitude. One way to access Livshutz's data is to provide separate subsets of data for separate functions. Another way to access Livshutz's data is to organize the data into layers (column 8, line 58 et seq.). Livshutz also describes

parcelizing and aggregating the data to facilitate use. However, none of Livshutz's data manipulation or organization techniques include assigning unique numbers to each node record based on a geographic location of a node relative to surrounding nodes. In Livshutz, the identification of each location 114 is done independent of, and without relation to, surrounding locations 114. Nor does Livshutz reorder the node records into a node list based on such numbers or divide the node list into node blocks that are stored consecutively in memory.

Israni is similarly deficient. Israni describes geographic data 40 that includes nodes and segments. Israni describes at column 7, lines 36 to 50, that the data 40 is organized and arranged to facilitate navigation functions by 1) parcelization, 2) parcel identification of the geographic data, 3) inclusion of normalized attributes, super nodes and segment aggregation. None of Israni's data manipulation and organization techniques include assigning unique numbers to each node record based on a geographic location of a node relative to surrounding nodes, nor reordering the node records into a node list based on such numbers, nor dividing the node list into node blocks that are stored consecutively in memory. Therefore, claim 1 is non-obvious.

Claim 25 generally recites a data structure embodied on a computer readable medium for defining a roadway network having road segments intersecting at nodes. The data structure comprises node records containing data indicative of corresponding nodes in a roadway network. Claim 25 clearly defines a first node record that corresponds to a single first node and that contains adjacency information for adjacent nodes. The adjacency information is defined as indicative of an estimated location of only adjacent nodes directly connected to the first node, where the estimated location is determined with respect to the first node.

Livshutz fails to teach or suggest the claimed node record structure. Livshutz' node records do not include adjacency information. Livshutz utilizes two types of records, namely segment records and node records. Both types of records are described as follows at column 8, lines 10-41 as follows:

> In one type of geographic database, there is at least one database entry (also referred to as "entity" or "record") for each road segment represented in a geographic region. This road segment data record may have associated with it information (such as "attributes", "fields", etc.) that allows identification of the nodes associated with the road segment and/or the geographic positions (e.g. the latitude and longitude coordinates) of the two nodes. In addition, the road segment record may

> have associated with it information (e.g., more "attributes", "fields", etc.), that specify the speed of travel on the portion of the roadway represented by the road segment record, the direction of travel permitted on the road portion represented by the road segment record, what if any turn restrictions exist at each of the nodes which correspond to intersections at the ends of the road portion represented by the road segment record, the street address ranges of the roadway portion represented by the road segment record, the name of the road, and so on. Each segment data entity that represents an other-than-straight road segment may include one or more shape point data attributes that define the other-than-straight shape of the road segment. The various attributes associated with a road segment may be included in a single road segment record, or preferably are included in more than one type of road segment record which are crossreferenced to each other.
>
> In a geographic database that represents the region 112, there may also be a database entry (entity or record) for each node in the geographic region. The node data record may have associated with it information (such as "attributes", "fields", etc.) that allows identification of the road segment(s) that connect to it and/or its geographic position (e.g., its latitude and longitude coordinates).

From the foregoing, it is clear that neither Livshutz's node, nor segment, records include any adjacency information indicative of an estimated locate of only adjacent nodes directly connected to the node associated with the node record.

In the outstanding office action, column 14-15, lines 16-30 of Livshutz are cited regarding adjacency information. Applicants disagree that the cited section of Livshutz relates to the claimed data structure. The cited section of Livshutz at columns 14 and 15 concerns aggregate segments that are comprised of "a string of road segments (between two aggregated-segment-significant nodes)" (column 15, lines 4-6). Hence, aggregate segment records present an aggregation of road segments and significant nodes. Claim 25 clearly defines a first node record to correspond to a single first node, not an aggregation of nodes and segments. Claim 25 further clearly defines the first node record to contain adjacency information indicative of only adjacent nodes directly connected to the first node. The claimed adjacency information is not indicative of aggregations of nodes and segments as is Livshutz' aggregate segment records.

Israni fails to make up for the deficiencies of Livshutz. Israni does not teach or suggest a record structure that at all resembles the claimed data structure. Hence, claim 25 is neither anticipated nor rendered obvious by the prior art.

Regarding claims 16 and 33, as explained above Livshutz and Israni fail to teach or suggest the claimed node records that contain adjacency information indicative of an estimated location of only adjacent nodes directly connected to the corresponding node. Nomura ('659) and Nomura ('678) are similarly deficient. Nomura ('659) describes its data structure at columns 3-5, which does not include any type of information indicating

estimated locations of only adjacent nodes directly connected to a particular node. Niether Israni, nor Nomura ('678) make up for this deficiency. Hence, claims 16 and 33 are non-obvious.

In view of the foregoing comments, it is respectfully submitted that the prior art fails to teach or suggest the claimed invention. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the telephone number listed below.

Respectfully Submitted,

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